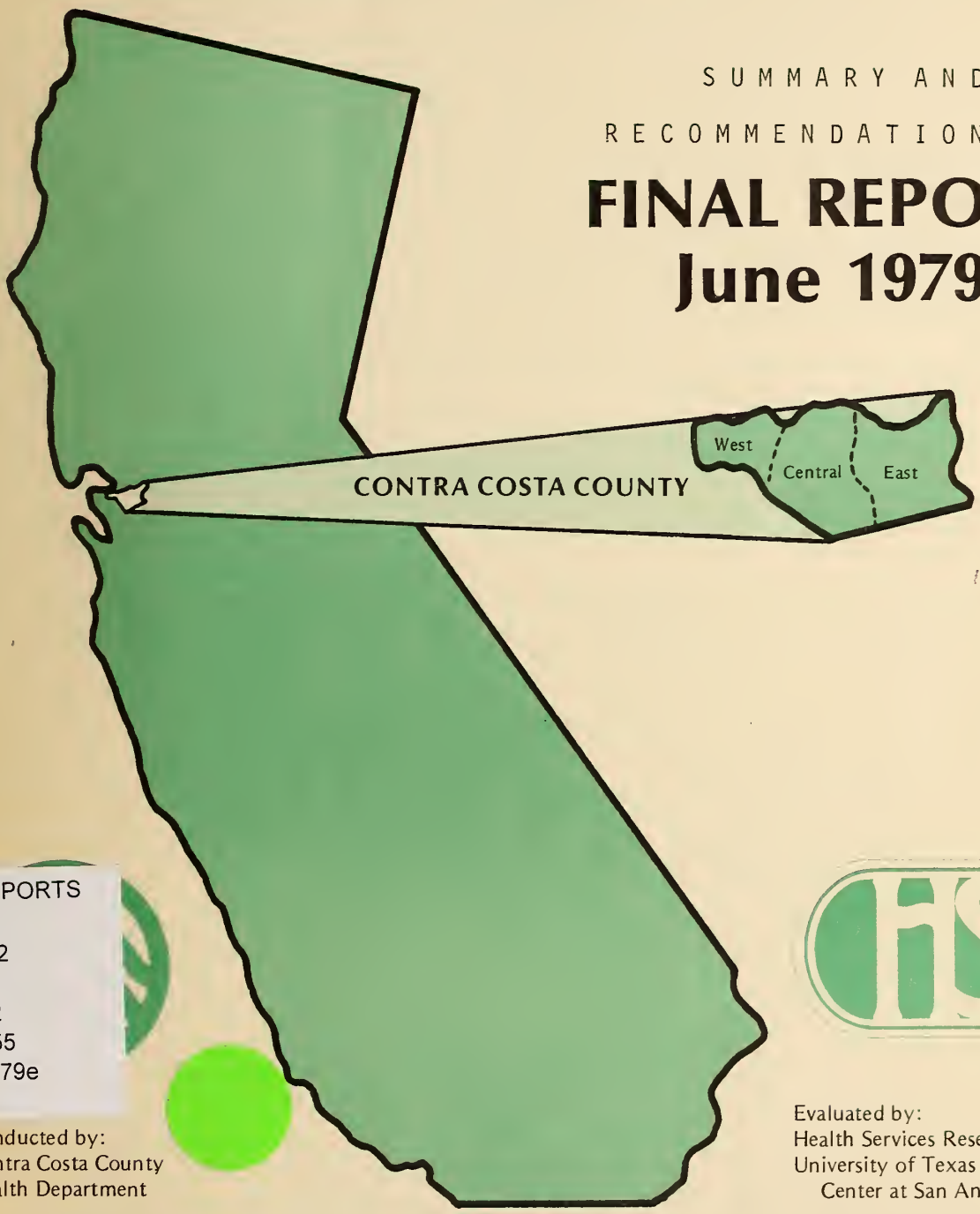
25.

CONTRA COSTA COUNTY, CALIFORNIA EPSDT DEMONSTRATION 1973-1977



SUMMARY AND

RECOMMENDATIONS OF

FINAL REPORT June 1979

Information Resource Center

REPORTS
RJ
102
.5
C2
U55
1979e

Conducted by:
Contra Costa County
Health Department

Orlyn Wood, M.D., M.P.H., Health Officer

Jogi Khanna, M.D., M.P.H., Project Director
Chief, Community Health Services Division

Evaluated by:
Health Services Research Institute
University of Texas Health Science
Center at San Antonio

Harry W. Martin, Ph.D., Director

Harold D. Dickson, Ph.D., Principal Evaluator
Deputy Director, HSRI

EPSDT 6.28

RJ
102.5
.C2
U55
1979e

Executive Summary

of

An Early and Periodic Screening, Diagnosis and Treatment Demonstration

June 1979
(Final Revision)

Conducted by

The Contra Costa County Health Department

Contra Costa County, California

1973 - 1977

The project was conducted under a grant (11-P-57671/9) from the Social and Rehabilitation Service (now Health Care Financing Administration) to the California State Health Department, Child Health and Disability Prevention Program who, in turn, contracted with the Contra Costa County Health Department. The evaluation was conducted and report prepared by Health Services Research Institute under a contract with the Contra Costa Health Department.

25.

Project Director: Jogi Khanna, M.D.
Chief, Community Health Services
Contra Costa County
Health Department
Martinez, California

Project Evaluator: Harold Dickson, Ph.D.
Deputy Director
Health Services Research Institute
The University of Texas Health Science Center
at San Antonio

TABLE OF CONTENTS

Table of Contents - Continued

SUMMARY REPORT AND RECOMMENDATIONS
Contra Costa County Health Department
EPSDT Demonstration Project
1974-1977

The Contra Costa County (California) Health Department conducted a Title XIX Early and Periodic Screening, Diagnosis and Treatment (EPSDT) demonstration program for children in selected low income areas of the county between March 1974 and June 1977. The project was funded under a Section 1115 grant from the Social and Rehabilitation Service HEW (now Health Care Financing Administration) to the California State Department of Health and the demonstration was carried out for the state by the Contra Costa County Human Resources Agency by contract with the state. Evaluation of the project and data processing were performed by the Health Services Research Institute (HSRI) of The University of Texas Health Science Center at San Antonio. The objective of the project was to explore and demonstrate methods of delivering EPSDT services to children of low income families to increase the number of children screened, reduce the number of undiagnosed and untreated medical and dental problems present in the population of children eligible for the project services, and to improve their immunization status. The experiences and lessons learned from the demonstration should have widespread applications in that two-thirds of the children who receive EPSDT services in the nation obtain them through health departments.

The complete project final report was designed to include as much detail as possible about the project for the reference of persons wanting to fully concentrate on certain aspects of the project history and findings. A summary report, designed for general distribution and organized more for policy makers,

was also prepared due to the size of the final report. A series of seven questions were posed and discussed in the summary report. Each of these will be stated, followed by a short answer and the recommendations stated in the summary report. A fuller development of each topic area is in the Summary Report.

Question 1: *How can the proportion of EPSDT eligible children screened be increased?*

Answer to Question 1: Based on experimental studies in the Contra Costa project it was learned that the only effective way to screen more than 18% of the eligible children is a combination of techniques including the hiring of community health workers (indigenous to the community, who conduct home visits), and working with community organizations and schools. If letters are to be used, an appointment date and time should be specified.

Recommendations: Based on the data from the project the following recommendations are made to state program managers concerning the ways to increase participation in EPSDT above 18% of program eligibles in an urban environment:

1. Encourage home visiting which is maximally interactive (getting family history and providing health education) by community health workers who have the flexibility of working the hours they feel necessary to meet performance standards. Experience of the project indicates that a minimum of one worker is needed for each 20 children to be screened per week.

2. Encourage maximum coordination with youth organizations and federal programs, such as Headstart, who have a high percentage of Medicaid eligible children.

3. Encourage screening of children in school whenever there are more than 60% of the children in the school who are Medicaid eligible by:

   (a) providing funds to screen both Medicaid and non-Medicaid eligible children in low income schools in order to save outreach costs.

(b) eliminating the child history as a routine part of screening school age children. The history can be obtained if an abnormality is suspected which requires a history for a complete diagnosis.

4. Conduct pilot demonstrations of innovative ways to reach the adolescent since participation is low among the 13-21 age group.

There is an interaction between the outreach component and the clinic staffing pattern. In order for the outreach to be effective the clinic needs to have a reputation as a warm and friendly environment, with staff who are well qualified doing activities perceived by the families as being important. On the other hand, if the outreach fails, or is highly variable in its performance, the clinic may be constantly overstaffed or understaffed. The next part of the report addresses the area of clinic staffing.

Question 2: *What is the optimal staffing pattern for EPSDT screening clinics?*

Answer to Question 2: The number and type of staff that will minimize cost will vary according to the wage rates, screening package, and available clinic space in a county. However, with a sufficient number of exam rooms, the ideal minimum cost staff would be one medical doctor, three nurse examiners, one lab technician, one clerk and one health aide.

Recommendations:

1. Encourage the use of nurses who have had training in giving physical examinations and who have had more than five years experience in pediatric nursing and at least six months of supervised experience in screening clinics. This could be done by providing sufficient funds in the screening fee or obtaining special funding to pay for the necessary training and supervision to get the nurse examiner program started.

2. Encourage, as allowable administrative funds, studies of the quality of screening through a process of having two different examiners screen the same children on a small sample (for example 1%) of the total screens performed by a screening examiner in a given year.

3. Provide grant funds or advance funding to agencies with screening contracts (if they can demonstrate the ability to keep the clinic full) to construct screening clnics with four or five examining rooms to achieve a minimum-cost staffing pattern. The Contra Costa approximation of this pattern was one medical doctor, two nurses trained to give the physical examination, one lab technician or R.N., two health aides, and one clerk. This would not be applicable in sparsely populated areas.

4. Encourage agencies conducting a large number of screens to conduct studies and submit a report about the show rate variability by hour, day, and clinic site.

5. Provide, in the screening fee schedule, a method to bill for a return visit for a recheck of a borderline positive finding prior to referral. This type of visit required almost half of the time of a complete screen so should at least generate half the reimbursement given for an initial screen.

Question 3: *How can rates of treatment for problems found by screening be increased?*

Answer to Question 3: The most difficult problems to get to treatment include dental and social emotional--even when the Medicaid funds are available. Most children with medical conditions got to treatment even with no treatment funds available. The data system helped to remind the project of children whose treatment was not adequately documented. Weekly case discussions and assignment of responsibility for each child helped the project keep up to date in the tracking.

Recommendations:

1. Require data systems and referral tracking systems which can document the status of referred problems 90 days to six months after the date of screening.

2. Ensure that follow-up responsibility is clearly delineated to an organization and to specific persons in an organization.

3. Provide funding to the responsible organization which is sufficient to cover the cost of adequate follow-up. The staffing requirement will depend upon the referral rate, but in Contra Costa a good estimate of staff time could be obtained by multiplying the number of children screened per week by one-half hour to get the total direct hours of follow-up effort needed to document problem status and assist in getting the children treatment when necessary. For example, if 100 children are screened

per week, approximately 50 hours of follow-up time will be required. Since personnel in any organization have difficulty spending more than 50% of their time in direct service, the requirement suggested for effective case management is at least one hour of worker time per child screened. This would indicate a need for 2.5 full-time equivalent persons per 100 children screened per week in order to conduct effective follow-up.

4. Encourage retesting of positive findings for vision and hearing prior to referral to reduce the volume of unnecessary referrals.

5. Prioritize the types of conditions that require a high rate of treatment because the present staffing in most programs is not sufficient to do 100% follow-up. Once these are prioritized, specify performance standards such as 75-85% show-for-treatment rates in the high priority conditions.

6. Develop demonstration projects to find ways to improve the rate of treatment for dental problems found in low income children.

7. Any increase in Medicaid benefits in Contra Costa County should go for dental care in children over age 4 and for medical care for children age 0 to 3 and 12-21 because children age 4 to 11 were apparently able to get treatment for medical conditions found in screening even without the availability of Medicaid.

Question 4: *Are there screening procedures usually employed in EPSDT programs which can be omitted without serious risks?*

Answer to Question 4: Experience in this and other demonstration projects indicates that this question can only be answered on a local basis. In Contra Costa, the routine urinalysis was the only test of questionable value. Blood tests performed at the county lab were useful, but having on-site hemoglobin readings would have allowed nutritional counseling to begin sooner. The T.B. test gave low yield on the children screened but was considered useful for finding other T.B. cases.

Recommendations:

1. Any EPSDT manager responsible for more than 3000 screens per year should review the rates of referral and false positives to determine if there are tests being used which could be eliminated or modified in order to reduce the resources used for screening and follow-up referrals that were unnecessary. This requires data on the number screened, the number and types of conditions being referred, and their status (including false positives) at the end of six months. A written report on such a review

should be required and funded as a part of administration or as part of the screening fee.

2. Develop a policy to specify when a urinalysis should be given to a child. The rate of true serious problems found in routine urinalysis is extremely low.

Question 5: *Can screening be targeted?*

Answer to Question 5: Using a criteria of maximizing the number of referrals per 100 children screened, priority should be given, in Contra Costa County, to all black children, age 5-21; Mexican American children, age 5-21 in the urban portion of the county; and Anglo children, age 5-21 on Medicaid (particularly those in the central part of the county).

Recommendations:

1. A program wishing to screen children who are most likely to need referral in order to operate within a limited budget should study its own experience of the referral rates by age, location, ethnicity, and, perhaps, previous utilization. As an example, Contra Costa County could maximize the screening of those children most likely to need referral (including dental) by focusing on black children ages 5-21 in the west part of the county. Next priority would be all Mexican American children ages 5-21, then Medicaid eligible Anglo children ages 5-21 in central county. Others could be intensively outreached when more dollars become available.

2. Medicaid eligibility for EPSDT should be extended to cover more black and Mexican American children than are now covered. EPSDT should be a component of any federal inner-city health initiatives.

3. Further study should be made as to why Mexican American children with Medicaid had only a few more referrals per 100 screens than those who were not on Medicaid. There was a large difference between Medicaid and non-Medicaid children in the total referrals of black and Anglo children per 100 screens.

Question 6: *What is the per child (average) cost for operating an effective EPSDT program?*

Answer to Question 6: The EPSDT program costs depend upon the effectiveness desired in terms of participation rate and treatment rate, the extensiveness of tests administered, the ability to minimize variability in clinic no-show rates and the age of the children screened. At a 40% participation rate, a 70-80% treatment rate, a high variability in no-show rate, and a

full screening package, the Contra Costa project had nine outreach and follow-up workers and a screening staff including the full-time equivalent of one M.D., two nurse examiners, one registered nurse, one clerk, and one health aide. In addition, the management staff included a medical doctor, a person with a Master of Public Health, a one-fourth time supervisor and an accounting specialist. Also needed was space, forms, data processing, and some evaluation. Treatment costs were close to $20 per child screened. The recommendations show the dollar equivalent of the staffing, but there are two major points not directly mentioned in the recommendations:

1. The administrative costs for outreach and follow-up in a preventive health program can be almost as high as the medical costs for screening and treatment.

2. The following unit costs represent minimum amount of resources needed to conduct an effective program. These do not include the research component of the project, but are based on project results.

Program Component	Minimum Necessary Unit Cost in 1975 Constant Dollars ($\frac{\$ \text{ spent/yr.}}{\# \text{ screened/yr.}}$)
Getting children into the screening clinic	$15
Complete screen, including retests for vision and hearing and administration of immunizations	$25
Follow-up to track and assist the child to treatment	$10
Treatment	$15

If a program totals the costs of all the resources (in all different agencies) used in conducting the program and gets values less than those shown above, the program should be carefully evaluated. Either they are extremely cost-effective or they are not achieving high participation and good quality screening.

Recommendations:

1. Sufficient funding (or staff positions) or incentives to provide such funding must be made available to accomplish outreach, screening, and follow-up. This required, for the Contra Costa program, $40 per child screened for screening and $25 outreach and follow-up. Treatment costs were less than $20 per child screened.

2. Studies of the family and health care system behavior leading up to the high cost medical conditions, such as gastroenteritis, pneumonia, failure to thrive, deliveries and abortions that occur among AFDC persons age 0-24, should be conducted. Ways to prevent high cost conditions may exist if the pattern of care received prior to hospitalization were studied.

3. Each local program should be provided funds to study ways to reduce the costs of outreach and follow-up since these costs represent 30% of the total program costs.

Question 7: *Is there any evidence indicative of EPSDT health benefits?*

Answer to Question 7: The Contra Costa project showed that children with multiple screens had increased healthiness (increase from 67% healthy on first screen to 80% healthy) on the second screen. There was improved dental, vision, nutritional, and immunization status due to the treatment of previously untreated conditions and emphasis on updating immunizations on-site. Some conditions were found (in over 1% of the children) early enough to prevent the expenditure over a period of two or three years of thousands of health care dollars per child with the condition. Examples of these conditions included milk allergy, Glucose-6-Phosphate Dehydrogenase enzyme deficiency, ventricular septal defect of the heart, and early diagnoses of hemophilia, Tuberculosis, and Osgood-Schlatter's disease. The program leads to improved health status of children rather than large immediate cost savings. There were sufficient examples of early detection of disease to indicate that controlled longitudinal studies should be attempted to carefully document the impact on health care costs.

Recommendations:

1. Make reports to legislative appropriations committees that show case examples for each major type of condition brought under care by EPSDT, and counts of the number of children brought to an increased health status created by correction or prevention of such conditions. The most frequent types of problems found and treated by EPSDT are not amenable to short run cost benefit analysis. The determination of value depends upon societal valuation of improved child health in comparison to other social needs.

2. Fund longitudinally controlled studies of the impact on all costs to the family generated by an EPSDT type program over a 5 to 10 year time frame. The experimental group should be intensively offered the program and the comparison group not. The data of the Contra Costa EPSDT project suggest that effective EPSDT can generate dollar savings to cover at least part of the costs when all sources of medical and educational expenditures of the state, local and federal governmental levels are considered over a long enough time period.

The summary concludes with some remarks about demonstrations. Much of the data provided by this demonstration could not have been obtained from retrospective evaluation because, at the time of the demonstration, no one else was conducting the program in such a way that the data would ever be generated. The grant funds provided staffing levels and facilities which allowed for program innovation and experimentation. Building of relationships of trust between the program staff, the community, and the evaluators and setting in place a comprehensive reporting system requires several years. EPSDT test sites centered in at least three operating programs around the nation need to be maintained for rapid testing of new concepts of EPSDT delivery.

Summary Report and Recommendations

of

An Early and Periodic Screening, Diagnosis and Treatment Demonstration

June 1979
(Final Revision)

Conducted by

The Contra Costa County Health Department

Contra Costa County, California

1973 - 1977

The project was conducted under a grant (11-P-57671/9) from the Social and Rehabilitation Service (now Health Care Financing Administration) to the California State Health Department, Child Health and Disability Prevention Program who, in turn, contracted with the Contra Costa County Health Department. The evaluation was conducted and report prepared by Health Services Research Institute under a contract with the Contra Costa Health Department.

Project Director: Jogi Khanna, M.D., MPH
Chief, Community Health Services
Contra Costa County
Health Department
Martinez, California

Project Evaluator: Harold Dickson, Ph.D.
Deputy Director
Health Services Research Institute
The University of Texas Health Science Center
at San Antonio

SUMMARY REPORT AND RECOMMENDATIONS
Contra Costa County Health Department
EPSDT Demonstration Project
1974-1977

The Contra Costa County (California) Health Department conducted a Title XIX Early and Periodic Screening, Diagnosis and Treatment (EPSDT) demonstration program for children in selected low income areas of the county between March 1974 and June 1977. The project was funded under a Section 1115 grant from the Social and Rehabilitation Service of HEW (now Health Care Financing Administration) to the California State Department of Health and the demonstration was carried out for the state by the Contra Costa County Human Resources Agency by contract with the state. Evaluation of the project and data processing were performed by the Health Services Research Institute (HSRI) of The University of Texas Health Science Center at San Antonio. The objective of the project was to explore and demonstrate methods of delivering EPSDT services to children of low income families to increase the number of children screened, reduce the number of undiagnosed and untreated medical and dental problems present in the population of children eligible for the project services, and to improve their immunization status.

BACKGROUND TO THE PROJECT

National Background

The Congress established a program in 1967 to provide early screening, diagnosis, and treatment (EPSDT) for all children enrolled under the AFDC (Aid to Families with Dependent Children) program. The basic assumption of the program seems to have been that early detection and treatment of health problems of these children would not only improve their health in the short run but would also help them escape the poverty cycle by better school performance as a result of improved health status--better nutrition, corrected hearing and vision problems, etc. As a result of federal administrative delay, prompted in part by concern over costs and a corresponding reluctance on the part of many states, the program guidelines were not published until August 1972. During the following year, less than one percent of the eligible children had been screened. At that time, HEW decided to explore alternate models for delivery of EPSDT services.

One result of this decision was the funding of several demonstration projects. These were in a neighborhood clinic (Barrio Children's Center) in San Antonio, Texas; a day care association (National Child Day Care), Washington, D.C.; a rural health program (Cuba, New Mexico) of the Presbyterian Health Services System which provided EPSDT screening through the schools in their area; and a county health department (Contra Costa County, California). The experiences and lessons learned from the latter demonstration should have widespread applications in that two-thirds of the children who receive EPSDT services in the nation obtain them through health departments.

Local Background

The California State Department of Health is responsible for the EPSDT program in California where both private physicians and health departments are paid on a fee-for-service basis for EPSDT screening. Prior to the receipt of the 1115 funds, the Health Department conducted screening and the Department of Social Services informed families of the screening and referred them to private physicians for screening. Although the Department of Social Services had the outreach responsibility, it was not funded to carry out this additional function. As a consequence, the Health Department was screening fewer than 500 children per year out of an estimated 23,000 eligibles. In 1973, the Contra Costa Human Resources Agency, of which the Health and Social Services Departments are a part, became concerned over the fragmentation of health services to children of low income families, and for this reason, sought an 1115 demonstration grant to overcome some of these deficits.

PROGRAM MODIFICATIONS

The acquisition of the 1115 grant funds stimulated and made possible an expansion of the EPSDT program and brought about a number of innovations in the EPSDT program. Principal among these were:

1. Nine community health workers were hired as an integral part of the department's staff to recruit children into the screening program, to provide family health education in the homes, and to conduct follow-up home visits to ensure that indicated treatment was obtained for those children found to have problems.

2. Several existing clinics were modified to accommodate daily screening of large numbers of children; a clinic in Richmond was renovated to improve its

screening capability and screening clinics were established in two communities--Brentwood and Concord. The renovations were stimulated by the guarantee of rental funds provided by the grant and were carried out to provide adequate space for examinations, audiometric testing, and laboratory work.

3. Nurses were trained to function as screening examiners to supplement the screening done by on-site physicians and conducted some 70% of the physical examinations over the life of the project.

4. A Citizen's Advisory Group was founded to advise the Health Department's operation of the program and served as a medium for exchange of information between the Health Department and the community, and it made constructive suggestions about clinic locations and policies. The support and advice of the Advisory Group was a valuable asset to the operation of the project.

5. Several studies were carried out in coordination with HSRI to examine (1) the cost-effectiveness of alternative approaches to outreach and follow-up; (2) the relative effectiveness of nurses as screeners; (3) opinions of staff members, clients, and treatment providers about the program; and (4) the flow of children through the screening clinics.

6. A computerized record system for tracking children from screening through treatment was established. This system captured and made possible the analysis of data by the HSRI staff to determine the rates of positive findings and false positives, and treatment rates by age, ethnicity, and place of residence of the children. Some of the forms used in this system were adopted by the State EPSDT program.

7. A waiver of Title XIX eligibility requirements permitted screening of all children from low income areas in selected parts of the county. This

allowed comparisons of screening findings on children from low income families eligible for Medicaid with those not eligible.

The availability of grant funds allowed expansion of EPSDT services which would not have occurred in a system based solely on fee-for-service payments for EPSDT screening. The following sections address the major operational issues involved in this program. Many, if not all of these, appear to be general to all EPSDT programs.

CONCLUSIONS AND RECOMMENDATIONS

The major conclusions and recommendations derived from the project may be organized as answers to questions and problems which the project faced and which were often posed to it by managers of other EPSDT programs, as well as EPSDT staff representing the national program. These questions may be outlined as follows:

1. How can the proportion of EPSDT eligible children screened be increased?
2. What is the optimal staffing pattern for EPSDT screening clinics?
3. How can rates of treatment for problems found by screening be increased?
4. Are there screening procedures usually employed in EPSDT programs which can be omitted without serious risks?
5. Can screening be targeted?
6. What is the per child (average) cost for operating an effective EPSDT program?
7. Is there any evidence indicative of EPSDT health benefits?

Each of these questions will be examined in terms of the problems giving rise to it, how the problem was addressed, and what results were obtained.

Following this, recommendations are made with respect to the issue(s) involved.

How can the proportion of the EPSDT eligible children screened be increased?

The response of eligible families to EPSDT programs has been rather curious, in that only a small portion of those mothers informed that their children were eligible for screening and treatment services actually availed themselves of these health services. The social and psychological factors behind this behavior are complex. Numerous less subtle factors no doubt help explain this behavior. One factor may be the low priority placed on seeking health care for what are ostensibly well children and a corresponding lack of awareness that a healthy appearing child may have problems such as poor visual acuity or a hearing deficit. Moreover, the low priority is also a function of the fact that many of these families have to deal with other more immediate personal and family problems. More obvious factors include transportation problems and the time required to complete the entire process of getting a child to the clinic, waiting for the screening to take place, and getting the child home. The anxiety generated for children (due to finger sticks, immunization, etc.) and mothers by this process cannot be totally discounted as a deterrent to active participation in the services.

The project sought to offer as much assistance as possible to overcome some of these barriers. Early in the project, and with the advice of the citizen's advisory group, it attempted to locate its screening clinics in more accessible locations. Later in the project it attempted to schedule screening appointments at convenient hours. It was found that few mothers could make 8:00 a.m. appointments; therefore, the earliest appointments for screening were set at 9:00 a.m.

The project also explored several different approaches to families to increase participation. These included informing families by letters and telephone; home visits by community health workers (CHW's); and screening through organizations serving children, e.g., schools, clubs, and Headstart programs. The letters and telephones were part of an experiment and the other two were performed both experimentally and routinely. What was done in each of these bears brief description, along with the experimental results.

Letters and Phone Calls: In two different locations in the county, some 1,200 letters were sent to randomly selected eligible families informing them of the services. Early in the program some 600 were sent to families in one city informing them of the services, but not giving an appointment date. The response rate after one month was less than 2%. Two years later in the same and one other area of the county 500 letters were sent to randomly chosen families. All the letters informed the families of the services, but one-half also apecified an appointment date. The response for screening within one month was 4.5% for letters without a date and 17.5% for those giving an appointment date.

An exploration was also made to test the effectiveness of telephoning families and setting up appointments. Records of some 600 families in several census tracts of one urban area were searched for telephone numbers. Of this number only 35% (209) had telephones, and 141 were reached; 28 made appointments, and of these, 64% (18) were kept.

Home Visits: The project conducted a small experiment to explore results using a different method of work schedules in making home visits and two different ways of conducting the visits. The work schedules were either fixed or flexible; that is, in the fixed, the Community Health Workers (CHW's) made

visits only during regular working hours. In the flexible, their hours were so arranged that their visits could be made at times when families were most likely to be at home. The alternate home visit methods are indicated in the following table as Method A and Method B. In Method A, the CHW's made brief home visits informing mothers of the project and attempting to schedule appointments for screening. In Method B, the workers inquired about the health of the entire family, took family and child health histories, attempted to make appointments, and had a much higher level of interaction.

The results of this effort and the number of families included are shown in the following table.

HOME VISITS

METHOD AND SCHEDULE

	Method A Fixed	Method B Fixed	Method B Flexible
Number of Families	70	70	57*
No. Contacted	20	24	43
% Contacted	29%	34%	75%
No. Appointed	3	12	25
% Contacts Aptd.	15%	50%	58%
No. Showing	3	10	17
% Aptd. Showing	100%	85%	68%
% of Total Families Showing	5.7%	14.3%	29.8%

*The flexible schedule was not part of the original design but was included after the experiment was under way as a result of a suggestion by the CHW's; thus the small number.

It is clear from the table that increased interaction and show of interest implied by Method B produced an appointment rate three to four times that of Method A. Secondly, the freedom to work on a flexible schedule more than doubled the rate of contacts; although, a negative correlation appears between rate of appointments and show rates. The last row of the table indicates that the combinations of increased interaction during home visits plus the flexible schedule resulted in a five-fold increase in the number of families participating in the screening (a statistically significant difference even with the smaller sample).

As shown above, a letter giving an appointment date produced a participation rate of 17.5%, or just over half of the most effective home visit method. Obviously, these results suggest that if participation rates on the order of 15 to 20% are considered satisfactory, letters giving appointments are by far the most cost-effective. On the other hand, if higher rates are required, the incremental cost for achieving higher rates will increase markedly.

Comparative results are reported in the Dallas EPSDT Demonstration Project Report.* The Dallas project was at the same stage of development and was conducted in a similar black population using community aides. The major difference was that the Dallas staff had more frequently updated eligibility lists and a more structured reporting system concerning their activities. The results in the Dallas project showed that 80% of the eligibles were contacted (versus 75% in Contra Costa); 84% of those contacted agreed to an appointment, and 64% of those appointed showed after their third appointment (44% on the

---

*See Evaluation Report--Phase 2 Feb-Dec. 1976. EPSDT Demonstration in an Urban Setting, Dallas, Texas, Health Services Research Institute. May 15, 1977. Pages 14 - 36.

first appointment). This would result in a percent of total eligible families showing of (.8 X .84 X .64 X 100% =) 43% versus the 29.8% reported for the flexible hours and high family interaction (Method B) reported in Contra Costa. The primary difference came in the slightly higher contact and appointment rate. There are two possible reasons for these differences. One is that while the time period of study extended over six months in both cases, the Dallas eligibility lists were more up-to-date, allowing better information for contacting clients (phone numbers and addresses). The second is the health department was the only source for EPSDT in Texas; so, clients could not say that they would go to their private physician to avoid a commitment.

An outreach study performed in the predominantly Anglo low income area of Contra Costa County showed that as high as 44% of the eligibles could be screened through interactive personal contact and the use of reminders both before and after screening appointments. Therefore, the Dallas results and the Contra Costa results were very similar.

One outreach method tried in Contra Costa County was to conduct home visiting only after letters and phone calls had been attempted. This method was compared to home visiting as the only method (Method B, Flexible Hours) in the Richmond, California area. It was found that the cost-effectiveness of first sending letters and phone reminders was no better than direct contact of the eligibles in the first place because those not responding to letters and phones were the most difficult to find at home and required extensive work to encourage appointments to be made and kept. This result was also confirmed in the Dallas project* where the face-to-face home visiting for all that could be

---

*Ibid. Page 36.

contacted was compared to a sequential approach in which home visiting was only used when letters and phone calls failed.

Since home visiting by community health workers with maximum interaction with clients and flexible hours of visiting was the most effective of the methods discussed so far in achieving a "high" participation rate of the target population of eligible children, the CHW's will be discussed in more depth before presenting other techniques that were tried.

The CHW's were persons from the communities being served and most were former AFDC recipients. Six of the nine workers had formerly worked as outreach staff for the Health Care Outreach Project in the County Department of Social Services. These workers were generally well-accepted by the community, and their presence lent credibility to the screening program in the eyes of many parents. Salaries for the workers ranged from $7,000 to $9,000 per year. Their principal duties were to visit families with eligible children to (1) encourage participation in the screening program; (2) provide health education to families during these visits; and (3) follow-up on children who were referred for treatment of problems detected by screening.

During the home visiting using the flexible hours and increased family interaction method and using the AFDC list, the CHW's spent an average of five hours of direct "in the field" time per family that finally showed for screening (total direct hours ÷ no. of families screened). Other indirect and related administrative activities required another four hours per family screened making a total of nine hours of CHW time required per family screened. This does not mean that <u>each</u> family required nine hours, but that due to

difficulties in finding families at home and the number of no-shows, this was the average time needed to accomplish a projected number of families to be screened. If it is assumed that two children per family are screened, then the estimate becomes 4.5 hours of CHW time per child to be screened. This would mean that a program wanting to screen 100 new children per week would require [(100 children X 4.5 hours each) ÷ 40 hours per week per worker =] 11.25 full-time equivalent outreach workers. If the CHW's were employed, but persons also came to the clinic for return appointments or because they heard about the clinic through other means, it is possible that as few as eight workers could do the job. This is what the staffing was like in the total project beyond the experiment in which a particular method was used. Therefore, it is suggested that a clinic needs a minimum of eight full-time-equivalent outreach workers conducting only recruitment of families per 100 children to be screened each week.

Although the CHW's were quite effective, there were some managerial problems. Some workers were in poor health and many of them experienced personal and family problems from time to time. Such factors often resulted in the absence of one or two workers at a time. A second problem arose from the workers' level of education and training. Some had trouble communicating within the bureaucratic organization of the program, and some were not adept at accurate record keeping and written documentation of the needs of the families. These problems were increased by the fact that, at the outset of the project, coordination between the nurses and CHW's lacked full effectiveness as a result of conflicting role expectations. This conflict was considerably reduced by use of regularly scheduled conferences between nurses and CHW's and

record keeping inadequacies were reduced by the addition of clerical staff to the clinics.

Some of the problems with the aides could be prevented in the future with greater selectivity in hiring with respect to health status, training, and education. Community health workers, however, proved their value; and are now an integral part of the health department's county-wide program.

Since the door to door recruitment of children resulted in only 30% participation of the eligibles, the project also tried to work with organizations where children were already assembled. Headstart had a contract with the health department in which the Headstart personnel brought the children to the clinic and partially reimbursed the county for the non-Medicaid children. The Richmond Boy's Club worked with the CHW's to develop an entire health program including a screening day in which the health department screening team went to the club site and screened 80 boys in one eight hour period. The preliminary work was accomplished by the CHW's. Although this proved to be a cost-effective way to supplement screening, it cannot be counted on for a significant number of children since most clubs have few Medicaid eligibles. However, most school age Medicaid eligibles are in school.

Toward the end of the project a screening team was taken to the schools. Three schools were approached. The Stege Elementary School in Richmond focused on all children in an elementary school who desired to have a screen. In the other two schools only first grade children who had not completed a required physical exam were the children to be screened. The general procedure was to carry out the program in the following steps:

(a) The school and health department personnel had two four-hour planning meetings to discuss the plan for screening.

(b) The school sent out letters to families to determine if they would like to have their children screened.

(c) Community Health Workers visited the homes to get the child's history and parent permission to be screened.

(d) The screening was held at school in two sessions and parents were invited to attend. During the first session, the blood was drawn and the vision and hearing tests were given. In the second session, the physical examination was performed and immunizations were given along with referrals for problems found in screening.

This procedure resulted in an efficient use of resources because only that staff necessary for the anticipated number of children was required.

Communities having a high percentage (more than 60%) of school-attending children being Medicaid eligible could achieve cost effective screening through this procedure. There are some problems which the project faced that should be considered before attempting school-based screening for EPSDT.

(a) Outreach costs were not eliminated because the parent had to be contacted by the health department personnel to get the history and permission to screen. The data from the screen showed that none of the problems referred from screening in the three schools were of the type that a history would have helped to discover.

(b) Coordinating with school officials for planning took considerable time, although this should be reduced for continued screening.

(c) Volume was low due to absenteeism and because the school districts studied have few low income children who had not already received the required school entry exam. Since the volume was low, school screening was no more

cost-effective than the regular clinic screening.

(d) The health department was reluctant to continue the program because it had to absorb the cost of screening non-Medicaid children.* It was felt that screening only Medicaid children in the school would be a violation of their privacy, but the Medicaid screening fee did not allow for sufficient funds to screen non-Medi-Cal eligibles also. The health department would have a financial incentive to go to the schools if it were given outreach funds which could be spent for paying for non-Medicaid screens in high Medicaid density schools. It may have been cheaper to screen the non-Medicaid children without charge, or on some sliding scale basis, than to try to outreach only the Medicaid children in a separate clinic. However, this would only work if the child history were not a part of the routine screening package and the volume were at least 30 - 40 screens per day.

Many unanswered questions remain concerning ways to conduct screening of Medicaid children in the schools. Further studies are needed.

Through the combination of outreach techniques discussed above, a total of 12,000 children were given more than 19,000 screens during the time period of March 1974 through June 30, 1977. Once the federal funding ended, the county stabilized at a rate of 500 screens per month. This was more than had been screened per year prior to the project.

Each child screened had the date of birth recorded on the child history form. From these forms it was possible to analyze the age composition of the

---

*In the first three years of project activity, both Medicaid and non-Medicaid low income children could be covered by grant funds. But this was not the case at the time when most of the school screening was conducted.

children screened to determine if any age group was missed in the outreach methods used. Whereas 30% of AFDC persons under age 21 were 13 - 21 years of age, only 10% of those screened were in this age range. A study of the family composition of children showing for screening revealed that the children coming to the clinic had older siblings at home who did not attend. Special measures are necessary to encourage teens to attend. A teen advisory council was formed. They suggested separate clinics for teens and a format more oriented toward interests of teens. This is especially important since the rate of medical referrals per screen was high among the teenage group and the dental referrals were extremely high in comparison to other age groups.

Once this problem was recognized, a proposal for a teen clinic was developed and it was subsequently funded by the Health Care Financing Administration. The project became fully implemented in January 1979.

Recommendations Concerning Ways to Increase Program Participation:

Based on the data from the project the following recommendations are made to state program managers concerning the ways to increase participation in EPSDT above 18% of program eligibles in an urban environment:

1. Encourage home visiting which is maximally interactive (getting family history and providing health education) by community health workers who have the flexibility of working the hours they feel necessary to meet performance standards. Experience of the project indicates that a minimum of one worker is needed for each 20 children to be screened per week.

2. Encourage maximum coordination with youth organizations and federal programs, such as Headstart, who have a high percentage of Medicaid eligible children.

3. Encourage screening of children in school whenever there are more than 60% of the children in the school who are Medicaid eligible by:

   (a) providing funds to screen both Medicaid and non-Medicaid

eligible children in low income schools in order to save outreach costs.

(b) eliminating the child history as a routine part of screening school age children. The history can be obtained if an abnormality is suspected which requires a history for a complete diagnosis.

4. Conduct pilot demonstrations of innovative ways to reach the adolescent since participation is low among the 13-21 age group.

There is an interaction between the outreach component and the clinic staffing pattern. In order for the outreach to be effective the clinic needs to have a reputation as a caring, friendly environment, with staff who are well qualified doing activities perceived by the families as being important. On the other hand, if the outreach fails, or is highly variable in its performance, the clinic may be constantly overstaffed or understaffed. The next part of the report addresses the area of clinic staffing.

What is the optimal staffing pattern for EPSDT screening clinics?

Optimal staffing involves selecting the number of personnel and the skill mix that should be in a clinic so that costs are kept to a minimum within the constraints that children with true problems have a high probability of being referred, children with no problems have a low probability of referral, and children's preventive needs (such as immunization and health education) get sufficient care and attention to promote health. Factors affecting the number of staff members required include the space available, the variability in the show rates, and the volume of children to be screened. The skill level of the persons hired depend upon the degree of substitutability of persons with different types of training and upon the economic costs for each type of person.

Working toward the optimal staffing pattern requires both trial and error

type experience and specific studies of the factors mentioned above. The specific studies conducted in conjunction with the project included a queuing study, a staff attitude study, and a dual screening of 225 children as a"quality of screening"evaluation. The dual screen also served as a measure of nurse-physician substitutability in the physical examination portion of the screen.

Before proceeding to discuss what the county found, a brief description of the screen is given.

The screening procedures for a complete initial health department screen for a four year old child included tests for vision (Titmus), hearing (audiometer), drawing of a blood sample for appropriate hematology (including hematocrit, hemoglobin, white blood count, lead, sickle cell trait or disease, and Glucose-6-Dehydrogenase Phosphate or "G6PD"), urinalysis, immunizations, tine test, history,and physical. An initial screen done at the health department required an average direct (in process) service time of 40 minutes, half of which was spent on the physical exam. The physical exam included time for health education concerning any problems found in screening or other concerns of the mother or person being screened. At its peak level of operation, the project had three fixed screening clinic sites and two satellite clinics operating in churches in the community. A time study showed that a child going through screening spent an average of 80 minutes at the clinic for an initial screen (40 minutes direct service, 40 minutes waiting at different screening stations).

Since the physical examination took the largest amount of time of any screening procedure, the personnel conducting that part of the screen will be discussed first. Through some other grant funds, the Contra Costa County Health Department was able to establish a training program for nurse examiners in conjunction with

several of the health science centers in the area. This included university course work and experience in special screening clinics operated by the county. These nurse examiners conducted the physical examination for 70% of the children screened by the project. The other 30% were screened by physicians who were on contract to the health department from County Medical Services (the county acute care system) and by health officers in the health department. A physician was present at each clinic to supervise the screening, do screening, and provide consultation as needed. Using data available from a queuing study, it was shown that the nurse examiners consulted with the physician for 15% of the children screened. The overall EPSDT data system for screening showed that the nurse age-adjusted referral rate*was five problems per 100 children screened higher than for children examined by a physician. The nurses' rate of moderate to severe problems diagnosed (as rated by the diagnosing physician or dentist to whom the child was referred) was also higher (mainly due to the higher rate of dental problems referred by the nurses). It was, therefore, unlikely that there was a problem of too many false negatives among the nurses. However, to more carefully establish the extent of similarity between nurse and physician findings, a dual screen study was conducted to compare physical examination findings of nurse and physician examiners on the same children seen by each on the same day.

The Dual Screen Study: The selection of the person to examine each of the 252 children first was random. Neither saw the results of the other, nor consulted with each other about suspected problems (see Chapter 4 of the full Contra Costa EPSDT report for details). There was total agreement about the child's health status for 84.9% of the 252 children in the dual screen study. However, for

---

*The number of referrals per 100 screens in each age group were considered and the age distribution of the children seeing physicians used to compute an overall rate for both physicians and nurses.

10.3% of the children there was disagreement that the child had a problem and for 4.6% of the children, there was agreement that the child had a problem, but no agreement on what the problem was. A list of problems referred by the nurse and not by the physician and a similar list of problems referred by the physician and not by the nurse were compared. The only differences in the lists were that nurses tended to refer more children for dental problems and the physicians tended to refer more for emotional problems. The other problems reported by one examiner and not the other appeared to be randomly distributed between examiners and therefore not indicative of substantial differences of professional opinion. The nurses were therefore considered to be equally effective in the physical examination. Since the hourly direct cost was 60% of the cost of a physician, the nurses were shown to be cost effective as examiners when supplementing the on-site physician to increase the volume of screening. The ratio of the nurse and physician hourly charges may be different under different methods for allocating the indirect costs, and if so, the cost-effectiveness may be different elsewhere, depending upon the availability of health personnel. The dual screening procedure itself led to a review of immunization policies since there were differences of opinion on which immunization should be given first when several were needed and the dual screen pointed out a need for in-service training concerning referral criteria for dental and emotional problems.

The typical staffing pattern in the project clinics included one physician, two nurses (one of whom served as an examiner), a screening health aide, a records clerk and one or two on-call nurses. The major limitation in the number of staff members per clinic was the space liminations. Most clinic sites had

only enough space for two examination rooms. However, the guaranteed availability of rental funds through the grant gave the incentive to the County Board of Supervisors to lease an empty warehouse in Concord, California, and convert it to a large clinic with more than four examination rooms. When space was not a limitation, the outreach team guaranteed a high volume of screens each day, and there was a sufficient number of rooms for conducting the unclothed physical, hearing test, drawing blood, and taking the family histories. The project staffing pattern was one medical doctor, two nurses trained as examiners, a lab technician or R.N., two health aides, and one clerk. This team could serve 20 children per four-hour clinic session. It is emphasized that without special funding, a clinic with sufficient space to achieve this staffing would not have been built.

The "on-call nurses" were nurses who normally had other public health nursing tasks, but who were available to help in screening, given an hour or two notice. The data which showed why these nurses were necessary came from a queuing study in which each clinic session and the clinic flow of each client was carefully documented by forms completed on each client by the clinic staff. Also described for these clinics was the distribution of staff hours at each clinic and the clinic show rates.

The percentage of scheduled children actually showing for screening on any one day varied evenly between 35% and 78% for 90% of the clinics with an average show rate of 60%. The highest show rate from an appointment time perspective occurred between 9:30 and 11:30 a.m. and after 3:00 p.m., but the high variability from day to day in the show rate made cost-effective staffing very difficult. This show rate variability impacted the amount of time staff members were waiting for children to arrive at their screening station. It was found

that the entire staff spent a total of 53 minutes per child screened actually working to set up or operate the clinic. However, an average of 58 minutes per child screened was spent in waiting for children to show or be ready for the next station. There was a high negative correlation between client show rate and the staff waiting time. Staff waiting time could be reduced by having the clinic over-appoint by 50%. For example, if 20 screens are anticipated, 30 persons instead of 20 persons should be appointed. If 80% show instead of 60%, then the on-call nurses can be utilized and the cost of screening could be reduced by at least 20% if sufficient space were available for more exam rooms.

The queuing study also gave information that a visit to the screening clinic by a child returning for a recheck of a questionable positive finding required one-half the time of a complete initial or periodic screen. Yet, no fees were paid to the clinic for return visits. The policy of the clinic is to retest any vision and hearing problem that is considered borderline prior to referral. This can save the costs of sending the child to a doctor for care when it is not actually needed. For example, only half of the vision positives discovered in screening were eventually referred to optometrists and ophthalmologists due to this retest policy. However, until the fee structure is changed to pay for a clinic visit for this recheck, the incentive to continue the policy is very weak.

Since nurses are the primary type of personnel involved in screening, it was felt that the organizational structure of the clinic should be highly suited to nurses. An attitude survey was conducted in which each staff member was asked to indicate their feelings about their work, supervision, co-workers, and pay and to suggest ways to improve the work environment. Early in the project, the EPSDT project was treated as a separate entity under the direction of the

project director, utilizing nurses from the health department division of nursing services, but the staff attitude study revealed some intra-organizational problems. The nursing staff felt they had too many chiefs--trying to serve both the programmatic needs of the project, and the traditional policies of nursing service. In response to this, the health department gave increased responsibility for the project planning and operation to nursing service, and hired a nursing service liaison nurse to coordinate nursing service policies and training with the needs of the EPSDT clinics with respect to forms, scheduling, staffing, and standards. This worked well, and the position has been maintained after the federal funding ended. The staff attitude study also revealed that the staff was very pleased with their work (except for paper work), and felt the program was worthwhile. Nurses requested more feedback in terms of the outcomes of their efforts. This requires a paper work system. Efforts have been made to streamline the records systems, minimize nurse paper work, and provide more meaningful and rapid feedback of results of the screening activity.

Recommendation to State Program Managers Concerning Optimal Staffing of EPSDT Clinics:

1. Encourage the use of nurses who have had training in giving physical examinations and who have had more than five years experience in pediatric nursing and at least six months of supervised experience in screening clinics. This could be done by providing sufficient funds in the screening fee or obtaining special funding to pay for the necessary training and supervision to get the nurse examiner program started.

2. Encourage, as allowable administrative funds, studies of the quality of screening through a process of having two different examiners screen the same child on a small sample (for example, 1%) of the total screens performed by a screening examiner in a given year.

3. Provide grant funds or advance funding to agencies with screening contracts (if they can demonstrate the ability to keep the clinic full) to construct screening clinics with four or five examining rooms to

achieve a minimum-cost staffing pattern. The Contra Costa approximation of this pattern was one medical doctor, two nurses trained to give the physical examination, one lab technician or R.N., two health aides, and one clerk. This would not be applicable in sparsely populated areas.

4. Encourage agencies conducting a large number of screens to conduct studies and submit a report about the show rate variability by hour, day, and clinic site.

5. Provide, in the screening fee schedule, a method to bill for a return visit for a recheck of a borderline positive finding prior to referral. This type of visit required almost half of the time of a complete screen so should at least generate half the reimbursement given for an initial screen.

How can documented rates of treatment for problems found in screening be increased?

In a Medicaid information memorandum published in February 1974*, it was reported that, based on studies of operational EPSDT programs in selected localities of eight states, the overall percent of problems referred that had been documented to reach treatment (either through Medicaid claims or other reports) was only 46.1% with a range of 25% to 69% between localities. In that report, it was recommended that a formalized system of patient referral be used for case management and that a specified person be responsible for assuring that a child gets to a diagnosis or treatment provider.

One of the recommendations of that report was that tracking systems be developed and that the best way to input data to such a system was through the use of case workers, public health nurses or community aides who were responsible for assuring that the child gets to a provider.

This demonstration installed such a system in which each referral was documented on a multipart form and information was received from

---

*MSA-1M-74-11, February 21, 1974. EPSDT Impact and Evaluation Study Summary - Phase II. Regional Health Services Research Institute, The University of Texas Medical School at San Antonio.

the medical care provider to whom the child was referred through a self-mailer return form. The mothers hand-carried the form with them to the physician or dentist who, in turn, returned the form 50% of the time. When the form was not returned after 60 days, the project staff phoned the office secretary about the outcome of treatment. The computerized data system was designed so that a list was printed of those problems lacking follow-up documentation 90 days after referral. Then the follow-up staff attempted to contact the mother to determine if the child had shown for treatment or if further assistance was needed.

When the project screening activity became fully operational, the volume of referrals was so large that the project was not sufficiently staffed to conduct good problem tracking. When the first "past 90-days without resolution" problem list was printed it became clear that there were too few follow-up staff members and the existing staff was not appropriately organized to achieve good follow-up documentation. Therefore, weekly conferences of nurses and community health workers were established to discuss each case and to assign responsibility for follow-up. This organization allowed for better case monitoring so that over 90% of the referrals were tracked for determination of resolution status. Once this documentation was accomplished, the data revealed difficulties in getting children to treatment.

The percentage of referred problems that were considered as programmatically successful referrals ("treated", "under long term care", "problem confirmed, but no treatment necessary at the present time", and "false positive") is shown in Table S.1, Part A for all children in the project with Part B showing the percentage for just those children who were Medi-Cal eligible. The table refers to East and West County program activity. Before discussing the results, a brief

Table S.1
Part A

Rates of finding and "successful resolution" of medical and dental problems by age group for original screens in East and West Contra Costa County May 1974-March 1977.

Age	Number of Screens	Number of Referrals for Treatment per 1000 screens		Programmatic Problem Resolution* per 1000 screens		% of Referrals that are resolved	
		Medical	Dental	Medical	Dental	Medical	Dental
0-3 mos.	512	107.4	7.8	85.9	3.9	80%	50%
4-11 mos.	466	216.7	2.1	126.6	2.1	58%	100%
1 yr.	507	337.3	17.8	201.2	5.9	60%	33%
2-4 yrs.	1579	227.4	163.4	147.6	58.3	65%	36%
5-12 yrs.	2187	237.3	296.3	164.2	128.5	69%	43%
13-21 yrs.	1207	259.3	247.7	146.6	102.7	57%	42%
	6438						

Table S.1
Part B

Rates of findings and successful resolution of medical and dental problems for Medi-Cal eligible children in East and West Contra Costa County July 1974 to May 1977 (original screens).

Age	Number of Screens	Number of Referrals for Treatment per 1000 screens		Programmatic Problem Resolution* per 1000 screens		% of Referrals that are resolved	
		Medical	Dental	Medical	Dental	Medical	Dental
0-3 mos.	142	169.0	21.1	149.9	14.1	88%	67%
4-11 mos.	141	262.4	0	120.6	-	46%	-
1 yr.	176	403.4	22.7	244.3	0	61%	0
2-4 yrs.	500	282.0	198.0	184.0	84.0	65%	42%
5-12 yrs.	759	313.6	324.1	196.3	185.8	63%	57%
13-21 yrs.	364	357.1	365.4	263.7	186.8	74%	51%
	2082						

*Programmatic resolution=treated; under long term care; diagnosed, but no treatment necessary at the present time; and "false positive".

description of the geographic classification is given. The project had three major target areas named as West County, East County, and Central County. In West County, census tracts were selected in and near urban Richmond, California. This area was predominantly black in ethnicity but had low income Anglos and Mexican Americans. The income was the lowest of any area in the county and the Medicaid eligibility rate the highest. East County is a rural, predominantly Mexican American and Anglo area near and including Brentwood, California. The Central part of the county was comprised of low income, Anglo children near Concord.

Table S.1 contains the data for just those children in East and West County. These areas were the focus of the first three years of project activity. The project also had a waiver of eligibility and was able to serve, with grant funds, both the Medicaid and the non-Medicaid low income children. This allows a comparison of the effect of Medicaid payment on the problem diagnosis and treatment results. Finally, the problem resolution defined in the table contains "false positives" as programmatically successful referrals because the children in this classification did reach diagnosis and were told that the positive screening finding was not confirmed. It may seem like these were failures on the part of the screening component, but any screening program should expect false positives and appropriately follow them to completion in order to document that diagnosis was received. If the rate is too high, the screening procedures should be checked.

It can be seen in Table S.1 that there is a difference in the follow-up rate between medical and dental problems (with dental nearly 20 percentage points lower). The highest resolution percentage occurred in medical conditions for children

under the age of three months. The next highest rate was among medical problems of 5-12 year olds. Among the dental problems, the 5-12 year old children were most likely to get treatment. Comparing the Medicaid and non-Medicaid dental referrals for children over age two, the Medicaid eligible children were 10-15 percentage points higher in resolution, but it is still distressing to see such low resolution percentages (~50%) even for children on Medicaid where payment for treatment was available. The dental no-show problem has many causes, but one is the length of time between referral and treatment (three to six months) due to lack of sufficient number of dental providers. Persons may have received treatment that did not show up in the data system at the time of the end of six months when all problems were closed out. Also, it may have been due to the children's fears about the treatment.

The documented medical treatment rate was lower than was hoped for in the ideal program, but was higher than the project designers had expected, given the high volume of referrals. The percentages given in Table S.1 may understate the show-for-treatment rate as reported by other programs because only those problems thought to be serious enough for referral were included, and not simply all positive findings. Many vision and hearing positives were retested prior to referral, and letters were sent to parents of children with sickle cell trait, borderline hematocrit, or routine infections, rather than making a direct referral.

The medical problems with the lowest rates of treatment include those classified as anemia, psychosis, speech disorder, nervousness, vision, orthopedic, obesity, developmental, and enuresis. Provision of the long term treatment required for some of these may require follow-up and treatment resources beyond

those available at the time of the project. A series of controlled follow-up studies were conducted in which children with problems were randomly assigned to a follow-up level of intensity ranging from no follow-up (none beyond the referral form and doctor feedback system) to immediate and repeated visiting by community workers and nurses. The studies showed that the rate of treatment within 90 days of referral with more intensive follow-up was no higher than the rate achieved with no follow-up. However, even the most intense follow-up stopped short of actually having a worker personally take the child for treatment, as has been done in other projects (such as National Child Day Care Association EPSDT Project in Washington, D.C.). It is hypothesized that the only cost effective high intensity follow-up beyond that required for maintaining a tracking system is that which prioritizes the most serious problems and then offers to take the child to treatment after the child has missed the first appointment. However, this needs to be investigated in greater depth.

A final observation from a review of Table S.1 is that the eligibility of the child for Medicaid (or Medi-Cal and Denti-Cal in California) made the greatest difference in the rate of treatment of medical problems among the 0-3 month children and the teens. The eligibility for Medicaid payments for dental care improved the rate of treatment for persons over age four. If any expansion of the target population to be eligible for Medicaid treatment benefits is possible, the priority should be families with children in these age groups.

Recommendation to Federal and State Program Managers Concerning Follow-up:

1. Require data systems and referral tracking systems which can document the status of referred problems 90 days to six months after the date of screening.

2. Ensure that follow-up responsibility is clearly delineated to an organization and to specific persons in an organization.

3. Provide funding to the responsible organization which is sufficient to cover the cost of adequate follow-up. The staffing requirement will depend upon the referral rate, but in Contra Costa a good estimate of staff time could be obtained by multiplying the number of children screened per week by one-half hour to get the total direct hours of follow-up effort needed to document problem status and assist in getting the child treatment when necessary. For example, if 100 children are screened per week, approximately 50 hours of follow-up time will be required. Since personnel in any organization have difficulty spending more than 50% of their time in direct service, the requirement suggested for effective case management is at least one hour of worker time per child screened. This would indicate a need for 2.5 full-time equivalent persons per 100 children screened per week in order to conduct effective follow-up.

4. Encourage retesting of positive findings for vision and hearing prior to referral to reduce the volume of unnecessary referrals.

5. Prioritize the types of conditions that require a high rate of treatment because the present staffing in most programs is not sufficient to do 100% follow-up. Once these are prioritized, specify performance standards such as 75-85% show-for-treatment rates in the high priority conditions.

6. Develop demonstration projects to find ways to improve the rate of treatment for dental problems found in low income children.

7. Any increase in Medicaid benefits in Contra Costa County should go for dental care in children over age 4 and for medical care for children age 0 to 3 and 12-21 because children age 4 to 11 were apparently able to get treatment for medical conditions found in screening even without the availability of Medicaid.

Are there any screening procedures or ways of doing those screening procedures usually employed in EPSDT which can be omitted or changed without serious risks?

A screening program generally adopts a screening package promoted by a higher level authority. One advantage of a multiphasic screen is that additional screening procedures can be added to the physical examination at very little additional cost for conducting the screening. However, the cost and

nuisance created by a particular screening procedure is in the area of follow-up and unnecessary visits to a provider when no problem really existed. The criteria for eliminating a particular procedure would be if the percent positive is low (e.g., 0.5% of those screened) and/or the false positives high (50% of the referrals) and that among the true positives, none were so serious that permanent damage could have been done to even a small number of children (for example, 1 in 1000) if the test were not carried out. On the other hand, a test may have low yield in itself, but may give evidence of a broader problem and therefore be useful to the community (such as T.B. testing).

It is also useless to screen for problems for which there is no known treatment if the prevalence is already well established in the literature.

The outcome of deliberations about questions such as those posed in the preceding paragraphs must be decided on a local basis after having tried the screening procedure on several thousand children.

Contra Costa County used an extensive battery of tests for most of the children screened including tests for tuberculosis, lead poisoning, Glucose-6-Phosphate Dehygrogenase deficiency, hearing, vision, anemia, kidney problems (urinalysis), etc. The only major testing omitted was developmental assessment beyond that possible through history and the physical examination. Developmental testing was suspended in California after a series of newspaper articles which questioned the validity and ethics of such testing.

The high rates of referral for dental, hearing and vision problems, and anemia left little doubt about the need for age-appropriate testing in these areas. The rates of referral for these problems in all 19,816 screens conducted throughout the entire county were as follows:

Percentage of All 19,816 Children Screened That Were Referred for Selected Conditions and the Age Group with the Highest Referral Percentage*

Area of Testing	% of Children Screened That Were Referred	The Age Group with Highest % Referred & the % of That Age Group that Were Referred		
		Age Group	% Screened	% Referred
Dental	10.4%	5-11 yrs	4,339	24.0%
Anemia	5.9%	0-4 yrs	13,148	7.0%
Vision**	1.3%	12-21 yrs	2,313	10.0%
Hearing**	0.2%	12-21 yrs	2,313	3.3%
Physical Exam (not including dental check)	15.0%***	No Age Breakdown Available		

The blood was drawn by a finger stick and two capillary tubes were then sent to the central lab for multiple tests, including tests for sickle cell disease and traits, enzyme deficiencies and anemia. Since an anemia referral was necessary in 6% of the children, time was spent making referrals when diet counseling could have begun at the time of screening. As a result, the county has added a device called the hemoglobinometer to the screening process. With this device a blood sample is put on a slide which is slipped into a colorimetric viewing device for reading the hemoglobin level. The clinic has found the device to be accurate and allows health education to begin at screening. The laboratory work was continued, however, because detection of G6PD, sickle cell trait and sickle cell disease among the black children and lead testing of all children was found to detect serious conditions early.

Among the 2,448 children tested G6PD, 2% had the deficiency. Although

---

*Based on Table S.2 shown later in the summary.

**The percentages reported here are considerably smaller than would normally be expected due to a vigorous retest-before-referring policy.

***This is an estimate based on the total number of referrals that were not due to other types of tests.

lead testing did not yield a large number of cases, it was felt that those children were found at an early enough stage that preventive intervention (in one case, changing the topsoil in an apartment complex built over an old lead battery dump) was useful in preventing brain damage.

It was found that 1.6% of those screened had positive findings for the urinalysis (including PKU). Approximately half of these were referred after retesting, but in the end, a total of only 0.5% of the children screened had a problem diagnosed. A review of the problems that were diagnosed convinced the project staff that the problems would have become evident from a health history and that routine urinalysis screening was not appropriate. Also, the urinalysis is very difficult to complete in a single screen for about 20% of the children screened.

Due to a policy of repeat testing of positive findings for vision and hearing at a later visit, only 6.2% of the children referred from the clinic and showed for treatment had a diagnosis of "no problem". The referral groupings of conditions with more than 20% false positives included suspected pinworms, thyroid condition, vision, heart murmur, lower gastrointestinal, ill-defined, and enuresis. However there was a sufficient number of true problems uncovered in these categories to indicate that such referrals were valuable in a context of screening.

The tuberculin skin test only yielded a rate of 1% positive findings and only showed two active cases within the group of 6,000 screened in the East and West portion of the project areas of the county. However, the health department felt that even with such a low yield, the health department tuberculosis control section was given enough information about potential carriers of tuberculosis as to make the childhood tuberculosis screening

beneficial.

Recommendations Concerning the Tests That May Be Eliminated or Changed:

1. Any EPSDT manager responsible for more than 3000 screens per year should review the rates of referral and false positives to determine if there are tests being used which could be eliminated or modified in order to reduce the resources used for screening and follow-up referrals that were unnecessary. This requires data on the number screened, the number and types of conditions being referred, and their status (including false positives) at the end of six months. A written report on such a review should be required and funded as a part of administration or as a part of the screening fee.

2. Develop a policy to specify when a urinalysis should be given to a child. The rate of true serious problems found in routine urinalysis is extremely low.

Can screening be targeted?

A large number of children (both Medicaid and non-Medicaid have not utilized EPSDT or a similar child health assessment program. Although the project did find a substantial number of previously undiagnosed and untreated conditions among the children screened, limited state and local funding requires a consideration of possible ways to tell, in advance of the actual screen, where priority for screening should be focused. Potential mechanisms for determining priority of the children to be intensively encouraged to get screening could be previous utilization of health care, ethnicity, geographic location, and Medicaid eligibility (assuming the program was available to all low income children).

The first step is to determine the quantitative measure of program's major goal. This is determined by whether the program is considered primarily preventive or curative. If it is preventive in the first instance, the decision about whether or not to focus on a particular group depends upon the presence of differential rates of referral for medical or dental conditions since the program wishes to have a clinic environment

contact with the child in order to provide some preventive health education and also make the families aware of the necessity of getting the condition treated. If the major goal is to maximize the treatment of previously untreated conditions, then the differential rates of treated conditions per 1000 children screened would be a quantification of goal attainment.

Since the program is primarily preventive in orientation, the rate of referrals per 1000 children screened is chosen as the criteria because it indicates the need for preventive intervention. However, in the discussion that follows, treatment rates will be provided as the data was available.

Each potential prioritizing mechanism will be discussed in the light of the data collected in this project on all children screened.

Previous Utilization of Health Care and Its Relation to Rates of Referral: When the Community Health Workers made home visits, the mother was asked to describe the health care services that each child received during the previous twelve months. The summary count of visits to various types of health professionals were coded on the child's file. It was reported by the parents that, at the time of the first examination at the health department, 65% of the children had received health services in the twelve months prior to screening, but only 1% had received the equivalent of a complete EPSDT screen. Although 30% had dental screening in the previous year, only 10% had received a vision test, 10% blood work, and 10% a hearing test. When the community health workers talked to parents, the focus was on those children with no regular source of medical care. However, according to data from an outreach study, only 10% refused screening by saying that they already had a private physician providing them with well-child care.

Among 11,418 children screened for the first time since the project began for the period March 1974 and May 1977, who also had complete child histories, 65% had seen one or more health professionals, 36% had seen their private doctor, 10% had been in an emergency room and 14% had actually been to a dentist. The rate of referrals per 100 screens (computed by dividing the number of referrals by the number of screens and multiplying by 100) was compared for each of these groups and the groups with no services utilized. The following table shows the results:

Relation of referral per 100 screens to previous health care utilization

Health Professional or Place Visited in Previous Year	No. Who Visited At At Least Once	No. of Referrals in Each 100 Screens	No. of Referrals Rated by Diagnosing Physicians as Severe* Per 100 Screens
Emergency Room	1133	44	3
None	3947	41	4
Dentist	1619	34	3
Any Health Professional	7471	34	3
Private M.D.	4108	33	3

The group most likely to have a referral were those who had been to the emergency room in the previous 12 months. These children had the highest rate of referrals for anemia, vision, and ear problems; but those who had not been to health professionals had the highest rate of referrals for dental problems. Children who had been to a private M.D. or a dentist had the lowest rate of

*On a scale of mild, moderate, severe.

referrals (about 10 referrals lower per 1000 children screened), but surprisingly still had 33 referrals in every 100 screens. Among those children who had been to a private physician, 12% still required a dental referral and 5% still had anemia on their initial screen. Also, the last column of the table shown on the preceding page indicates very little difference in the number of diagnosed severe referrals that showed for treatment per 100 screens. The number of severe referrals looks small in comparison to the total number of referrals because the child had to show for treatment to get such a rating and only half of the referrals that were returned to the health department had a seriousness rating checked.

From this table it can be concluded that if it is necessary to reduce the number of children to be screened, a low priority (if priority were based on the previous utilization and the number of referrals) would be those who had been to a physician or dentist in the previous twelve months. However, since even those having been to their physician had 33 referrals per 100 screens, the procedure of using previous utilization as a mechanism for prioritization is questionable. There are other more distinguishing factors as will be shown in the following paragraphs.

Relation of referral rates to age and location in the county:

Table S.2 is included to provide detailed data about relation between age and location on the referral rates for screens performed throughout the entire county in both the project areas and other parts of the county. The project census tracts were divided into three areas: West County, near Richmond, California; East County, the rural part of the county; and Central County, near Concord. As discussed earlier, the ethnic composition and economy of each part of the county is unique. An example of the way this affects EPSDT is that transportation to the screening clinic was requested a great deal of the time in

Table S.2

PERCENT REFERRED OF NUMBER SCREENED BY AREA AND AGE
ALL SCREENS - CONTRA COSTA COUNTY
BETWEEN MARCH 1975 AND MAY 1977

AREA OF COUNTY	WEST COUNTY PROJECT AREA (Richmond)			CENTRAL COUNTY PROJECT AREA - (Concord)			EAST COUNTY PROJECT AREA - (Brentwood)			NONPROJECT* AREA OF THE ENTIRE COUNTY			ENTIRE COUNTY PROJECT AND NON-PROJECT SCREENS		
Age Groups (in Years)	0 - 4	5 - 11	12 - 21	0 - 4	5 - 11	12 - 21	0 - 4	5 - 11	12 - 21	0 - 4	5 - 11	12 - 21	0 - 4	5 - 11	12 - 21
1. Number of Screens	3,829	1,766	1,011	831	232	134	1,654	973	709	6,834	1,386	459	13,148	4,339	2,313
2. Number of Referrals	1,190	1,031	640	130	105	62	399	399	208	1,078	521	267	2,797	1,996	1,177
3. Referrals per 100 Screens	31	58	63	16	45	46	24	35	29	16	38	58	21	46	51
A. Oental Referrals per 100 Screens	08	33	34	01	20	16	05	18	11	02	18	23	04	24	24
B. Medical Referrals per 100 Screens	23	26	29	14	25	31	19	17	19	14	20	35	17	22	27
4. Problems Referred as a Percent of Screens															
A. Hearing	0%	0.3%	0.4%	0%	0.4%	0.7%	0.1%	0.5%	0.3%	0.1%	0.6%	1.3%	0.1%	0.5%	0.6%
B. Vision	0.5%	4.2%	5.7%	0.2%	1.3%	5.2%	0.2%	1.2%	2.8%	0.2%	2.0%	4.4%	0.3%	2.7%	4.5%
C. Dental	7.6%	32.6%	33.9%	1.3%	20.3%	15.7%	4.8%	17.7%	10.7%	1.7%	17.7%	22.9%	3.8%	23.9%	23.6%
1) Caries	5.3%	25.6%	23.5%	1.0%	15.9%	10.5%	4.3%	16.3%	8.9%	1.2%	13.1%	15.7%	2.8%	19.1%	16.7%
2) Other Oental	2.3%	7.0%	10.4%	0.4%	4.3%	5.2%	0.5%	1.3%	1.8%	0.6%	4.6%	7.2%	1.0%	4.8%	6.8%
D. Anemia	8.4%	3.5%	3.5%	6.5%	3.9%	3.0%	7.7%	2.4%	2.0%	6.7%	3.6%	2.8%	7.3%	3.3%	2.9%
E. Orthopedic	1.5%	1.4%	1.3%	1.6%	0.4%	3.0%	0.9%	0.4%	1.0%	0.8%	0.7%	2.4%	1.1%	0.9%	1.5%
F. Dermatological	2.2%	2.0%	2.2%	0.5%	0.9%	2.2%	0.7%	0.8%	1.7%	0.8%	1.5%	1.7%	1.2%	1.5%	1.9%
G. Ear	1.5%	1.8%	1.2%	0.7%	3.9%	1.5%	2.5%	1.7%	0.1%	0.7%	0.9%	2.4%	1.2%	1.6%	1.2%
H. Heart	0.8%	1.2%	1.1%	0%	1.7%	0%	0.6%	1.0%	0.8%	0.1%	0.7%	1.5%	0.4%	1.0%	1.0%
I. Upper Respiratory	1.7%	1.5%	1.0%	0.5%	0.9%	1.5%	0.8%	0.8%	0%	0.5%	0.9%	1.5%	0.9%	1.1%	0.8%
J. Genitourinary	0.7%	1.0%	0.8%	0.1%	0.9%	0.7%	0.5%	0.3%	0.1%	0.2%	0.5%	0.7%	0.4%	0.7%	0.6%
K. Eye	0.8%	0.7%	1.7%	0.8%	0.4%	0%	0.8%	1.5%	0.4%	0.6%	1.2%	1.5%	0.7%	1.1%	1.2%

*Children who were screened in the Contra Costa County Medicaid screening, child health conferences, etc. therefore outside the census tratts designated as project areas. Most of these children were from the west county area surrounding Richmond.

urban West County but very seldom in rural East County. East County citizens had worked out their own arrangements for transportation, but the urbanized Richmond area seemed more dependent on external sources of support.

The following comparison of the number of referrals per 100 screens is extracted from Table S.2.

Number of referrals for medical* problems per 100 screens by project area

AGE GROUP	PROJECT AREA		
	West (Urban Richmond)	Central (Urban Concord)	East (Rural)
0-4	23	14	19
5-11	26	25	17
12-21	29	31	19

The West County and Central County children over age five have approximately 10 more referrals per 100 children screened than the East County project area. The preschool children in the East and West portions of the county have more medical referrals than those in Central County and therefore the greatest need for preventive care among preschoolers.

The dental results reflect that West County is in greatest need of dental care, followed by Central County. East County has the lowest rate of referrals for dental problems. These results are shown in the following table:

---

* Dental problems left out.

Age Group \ Project Area:	Number of dental referrals per 100 screens: West	Central	East
0-4	8	1	5
5-11	33	20	18
12-21	34	25	11

As discussed earlier in the summary, the percentage of referrals showing for treatment for dental problems was 85% in Central County and only 57% in East and West County among Medicaid eligible children. If the criteria were treated problems, then West County would not have as clear a priority. Central County would have (80% of 25 =) 20 treated problems and West County (57% of 34 =) 20 treated problems, giving equal priority. Both, however, would be greater than the number in East County with (57% of 11 =) 6 treated problems per 100 children screened.

Combining the number of dental and medical referrals per 100 screens gives the following ranking of East and West County age groups:

Group of Children: Part of County	Age Group	Number of Referrals Per 100 Screens
West	12-21	63
West	5-11	58
Central	12-21	46
Central	5-11	45
East	5-11	35
West	0-4	31
East	12-21	29
East	0-4	24
Central	0-4	16

If the county health department were to intensify outreach, it should be focused in the West and Central County target populations over age five.

Relationship of Ethnicity to the Rate of Referrals:

While it would not be fair to offer the program to one specific ethnic group and not another, the ethnic mix of the outreach staff may influence the priority given to an ethnic group based on the number of referrals per screen. The following table reflects the ethnic composition of the screens:

Ethnic composition of Contra Costa County EPSDT project area screens

Project Area	Number Screened	% in Each Ethnicity			
		Black	Mexican American	Anglo	Other
West	6612	68%	19%	12%	1%
Central	1198	2%	5%	86%	7%
East	3342	—	52%	44%	4%

Considering the entire county, the total referrals per 100 screens were generally highest among the black children, and lowest among the Anglos, with Mexican Americans in the middle.

However, among children age 0-4, the ethnic differences were never greater (when considering each part of the county separately) than 10 referrals per 100 screens and seldom greater than five referrals per 100 screens. Therefore, the following discussion deals only with 5-21 year old children where ethnic differences did occur. The largest differences among ethnicities are in the rate of dental referrals (more than 20 referrals per 100 screens difference between blacks and Anglos in West County and 10 difference between Mexicans and Anglos in East County), but the total medical and dental referrals show the pattern:

Referrals per 100 screens by location, ethnicity and age grouping

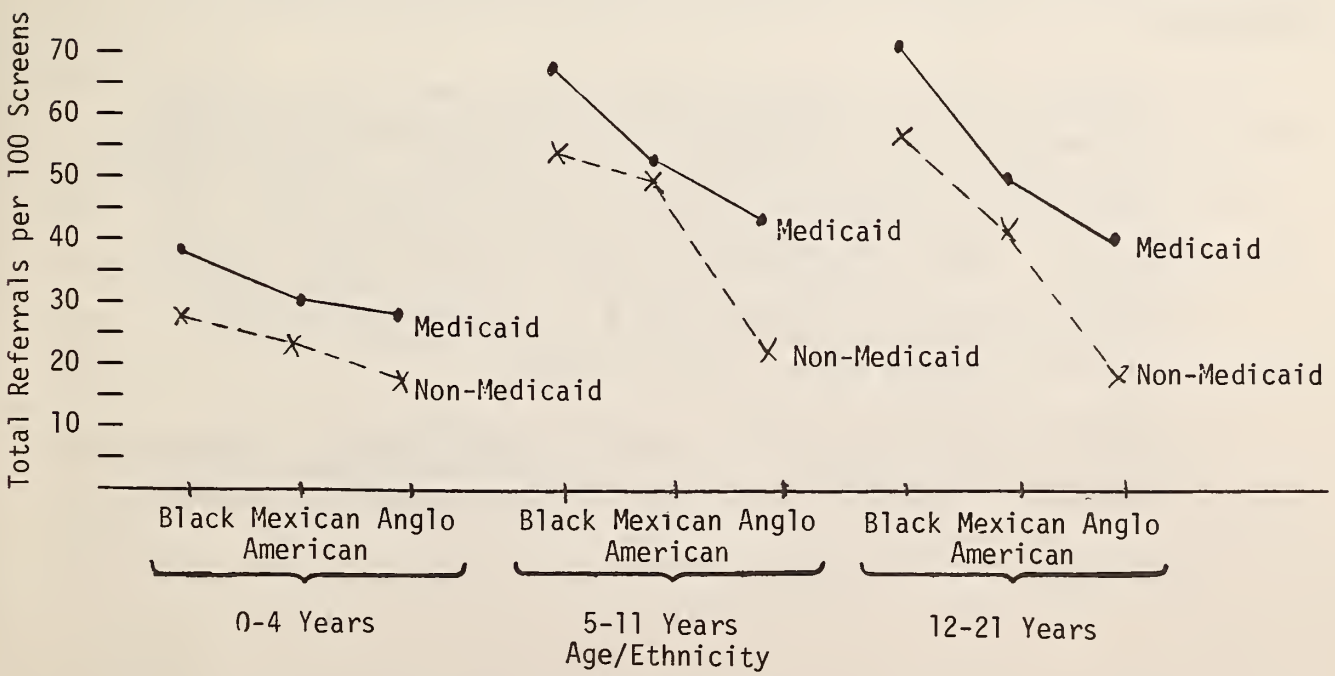
Location	Ethnicity	Age	Referrals Per 100 Screens
West County	Black	5-11	66
West County	Black	12-21	62
West County	Mexican American	5-11	61
Central County	Anglo	5-21	45
West County	Anglo	12-21	43
East County	Mexican American	5-11	43
East County	Mexican American	12-21	41
West County	Anglo	5-11	32
East County	Anglo	5-11	28
East County	Anglo	12-21	19

The blacks and Mexican Americans had one and one-half times the referrals of the Anglos in the West County. The Mexican Americans in East County had nearly twice the referrals per 100 screened as the Anglos in that section of the county. However, the Anglos in West and Central County had more referrals than East County Mexican Americans. The order of priority for preventive health care (including dental prevention) should then be (among children age five and over) West County blacks and Mexican Americans, Central County Anglos, West County Anglos (who are age 12-21) and East County Mexican Americans. In other words, Anglos in East and West County would get lowest priority for outreach activity for children in the 12-21 age group.

The Central County preschoolers that were screened would get lowest priority for more intensive outreach. East and West County preschoolers should get priority over the East County Anglo school age children (see page 39 for the preschool rates).

The Effect of Medicaid Eligibility on the Number of Referrals:

The EPSDT program was originally focused on Medicaid children because these children are in the very lowest income families and the legislative mechanism was in place to enable the payment for treatment once problems were found. This project obtained a Waiver of Title XIX Eligibility Requirements which enabled it to serve low income children regardless of Medicaid eligibility. Except for Mexican American children age 5-21, the rate of referrals was at least 10 referrals per 100 screens higher among the Medicaid children. Among Anglo children age 5-21, the difference was nearly 20 referrals per 100 screens greater for those on Medicaid. Apparently, then, Anglo children on Medicaid should be afforded a higher priority in screening than those not on Medicaid. The EPSDT program being focused on Medicaid children was appropriate in Contra Costa County for Anglos, but the referral rate among non-Medicaid Blacks and Mexican Americans was generally as high or higher than the rate for Medicaid eligible Anglos. This is shown in the following graph:



According to the Contra Costa experience, EPSDT eligibility should be extended to cover more blacks and Mexican Americans. This implies the need for integrating EPSDT into the inner-city health programs and health initiatives.

It is curious that the referral rate was so similar for the Mexican American children who were covered to those who were not (non-Medicaid) when the differences were large for the blacks and Anglos. The percent of Medicaid children who utilized a health service in the 12 months prior to screening was 10 percentage points lower among Mexican Americans than among blacks or Anglos.

Perhaps the language differences have caused barriers to the effective use of Medicaid benefits (especially for dental care). Another possibility is that many persons who are eligible for Medicaid due to income, do not even seek eligibility due to language problems, pride, etc. In this case the socioeconomic status of the Medicaid and non-Medicaid low income Mexican Americans would naturally be very similar with resulting similarity in undiagnosed or untreated medical or dental conditions.

Recommendations Concerning Prioritization of Screening of Target Populations:

1. A program wishing to screen children who are most likely to need referral in order to operate within a limited budget should study its own experience of the referral rates by age, location, ethnicity, and, perhaps, previous utilization. As an example, Contra Costa County could maximize the screening of those children most likely to need referral (including dental) by focusing on black children ages 5-21 in the West part of the County. Next priority would be all Mexican American children ages 5-21, then Medicaid eligible Anglo children ages 5-21 in Central County. Others could be screened when more dollars become available.

2. Medicaid eligibility for EPSDT should be extended to cover more black and Mexican American children than are now covered. EPSDT should be a component of any federal inner-city health initiatives.

3. Further study should be made as to why Mexican American children with Medicaid had only a few more referrals per 100 screens than those who were not on Medicaid. There was a large difference between Medicaid and non-Medicaid children in the total referrals of black and Anglo children per 100 screens.

What is the cost per child for operating an effective EPSDT program?

The full cost of operating a comprehensive optimum EPSDT project which is operated by a county health department has two major components, which may be classified as administrative and medical. The administrative costs include those costs necessary to get the children to the screening clinic and to encourage and document the treatment of their conditions. The medical costs are those medical and dental costs that Medicaid would pay under a vendor payment mechanism when a child showed up at a clinic without assistance, was given a screen or treatment, and the clinic billed Medicaid for the service. This medical component includes costs of screening and treatment. Under the methodology developed by HSRI, the estimated ongoing (excluding costs incurred solely in a research project) costs of data processing, evaluation and overall project management are allocated to the administrative and medical areas according to the extent to which each area used the data.

Medical Costs: The medical costs of screening and treatment are considered separately. The screening costs for this project (and for any program offering the full range of tests under a similar staffing pattern) were $40 per completed screen in 1975 California dollars. A completed screen includes the physical examination and all required tests, retests, and immunizations. This amount would be different in a program with a different age-mix of children, differing responsibilities for health education, and different ways of allocating indirect costs and in other locations of the country. Chapter 6 of the full Contra

Costa EPSDT Report describes how the costs were computed for the project and provides a child health assessment value unit to be used as a screening output measure for use in comparing unit costs among projects with differing age groups of children. For example, a four year old child requires 40% more dollar resources to screen than an infant. As discussed under the clinic staff section of this summary, the $40 per screen could be reduced (by perhaps as much as $8) in an environment which provided larger screening clinics, and developed a flexible staffing system to adapt to the variability in show rates. The $40 figure includes the proportionate allocation of space, office space, training, and data processing costs to provide for a continuing and responsible screening program.

The costs of treatment for referred conditions were estimated by studying the Medicaid payment claim (medical and dental) profiles for a small sample of 225 children screened in the project. Medicaid children who were treated and had a paid claim in the file had an average annualized increase in Medicaid costs of $40 for each new medical condition and $120 per completed dental referral. If all children with referred problems got treated and had care paid by Medicaid, the total costs for medical and dental treatment would be $20 per child screened at the referral rates experiences in Contra Costa. However, only 63-65% of the Medicaid medical referrals showed for treatment, and only 50% of those resulted in a paid claim. Only 55% of the dental problems reached treatment, and Denti-Cal* paid a claim for only 60% of those showing for treatment. The reasons for the moderate percentage paid were not known. It could be partially due to treatment received from providers not participating in Medicaid.

---

*California's dental payment program.

It could be due to providers not submitting bills in a timely manner, and it could be a problem in processing the claims. Whatever the reason, Medicaid gets a substantial amount of treatment for its child population at no cost.

It was found that a sample of unscreened children were generating more expenditures during the year prior to the screening time period than those who were screened. The unscreened children had apparently been sick and families possibly felt that screening would not be worthwhile.

When all of the Medicaid expenditures in the screened and unscreened categories are spread over the entire AFDC population of the county in proportion to the extent to which screening and treatment occurred in the project, the total annual Medicaid expenditure per child would be approximately $150, both before and after screening. Why did the total Medicaid costs change so little? First, there are a few children who have high cost conditions which appear to occur randomly, and without regard to when the children were screened. In the sample, 4% to 5% of the children accounted for 50% of the total costs. The diagnosis involved in the high cost conditions vary by age group, but include gastroenteritis, failure to thrive, tonsillitis, penumonia and bronchitis, deliveries and abortions. Therefore, high cost items obscure the impact of EPSDT on the Medicaid expenses. It is these types of illnesses that were present in the unscreened children, leading to higher costs prior to the time period when the rest of the children were screened.

The second reason why the total Medicaid expenditures change so little is the relatively low rate of treatment for dental problems, and the moderate rate of paid claims when treatment did occur.

The major costs of the EPSDT program are not the treatment costs, but rather,

the screening costs and the administrative costs. The administrative costs are described in the following paragraphs.

Administrative Costs: The costs of outreach, follow-up, and minor on-site treatment could vary substantially, depending upon the organizational structure and methods used. With the use of the Community Health Workers for recruitment of mothers for both the original and periodic screens, and follow-up of conditions referred in Contra Costa, these costs were similar to the costs of screening.

In the sections of this summary on outreach and follow-up, a staff of 13.75 full-time equivalent personnel for each 100 children to be screened per week were recommended for conducting an effective program (11.25 for outreach and 2.5 for follow-up). The costs, in this project for the Community Health Workers, related office space and supervision, supplies, data processing, and some minor on-site treatment provided at the project totaled to $25 per child completely screened. Sufficient funding needs to be provided to accomplish the desired number of screens. Since the cost of this component is high, local programs should be encouraged to experiment with alternative approaches to determine which of several hypothesized methods of outreach would reach the desired number of screens at least cost in the environment of the local program.

Recommendations concerning the costs of optimal EPSDT programs:

1. Sufficient funding (or staff positions) or incentives to provide such funding must be made available to accomplish outreach, screening, and follow-up. This required, for the Contra Costa program, $40 per child screened for screening and $25 outreach and follow-up. Treatment costs were less than $20 per child screened.

2. Studies of the family and health care system behavior leading up to the high cost of medical conditions (per episode), such as

gastroenteritis, pneumonia, failure to thrive, deliveries and abortions that occur among AFDC persons age 0-24, should be conducted. Ways to prevent high cost conditions may exist if the pattern of care received prior to hospitalization were studied.

3. Each local program should be provided funds to study ways to reduce the costs of outreach and follow-up since these costs represent 30% of the total program costs.

Is there any evidence indicative of EPSDT health benefits?

In light of the costs of getting children into screening, conducting the screening, and providing follow-up, the extent of nationwide support for full implementation of EPSDT depends, in large part, on its ability to generate health benefits and/or dollar saving commensurate with the costs.

Definitive evidence about the benefit to society of the EPSDT program can only be determined through a longitudinal controlled study where children are randomly assigned for recruitment for the program and then followed carefully for at least five years to determine the costs of care and health status at the end of that period. However, the data from the demonstration project gave some (intangible) indications of benefit being derived from the screening and treatment activities. These will be presented in two levels: (1) the rates and types of medical findings and corrected conditions; and (2) changes in healthiness ratings and rates of referral between the original and the periodic screen.

1. The rates and types of referrals from screening could be an indicator of the need for the EPSDT program. It can be computed from Table S.2 that, out of 19,800 screens reported from all parts of the county, there were 6,570 referrals. False positives occurred in only 6.2% of these problems and only 6% were previously under care. In addition, 50% of the seriousness ratings given by the providers to whom the referrals were made were rated as moderate to

severe cases of the condition for which the child was referred.

As a result of project activity between April 1974 and July 1976, there were 6,000 low income children screened at least once in the East and West county project areas alone. In this group, the following represent some of the conditions documented to have received care because of the EPSDT Project. Most of this treatment probably would not have occurred in the absence of the program.

554 children had carious teeth filled.

76 children had other dental problems such as gum boils, overbite, gingivitis, and broken teeth treated.

66 had refractive vision problems corrected.

51 got treatment for allergies such as milk allergy, hayfever, etc.

31 were treated for injuries and foreign bodies including stones, beans, and birdseed in the ear; child abuse; burns; etc.

31 had genitourinary problems such as nephritis, para-spasm, cystitis vaginitis, urethrostenosis, and undescended testicle treated.

27 had heart problems (non-functional) treated, including ventricular septal defect, pulmonic stenosis, sinus erythema.

13 had psychological or neurological problems such as hyperactivity, inconsistent bahavior, and other emotional problems brought under long term care.

11 children with speech problems such as articulation, slurring and "tongue-tied" were brought to treatment.

6 had nervous system problems such as cerebral palsy, borderline hydrocephalus, migraine headaches and muscular dystrophy brought under care at an early stage.

6 were brought under treatment for epilepsy or seizures.

3 were given medications and counseling to control enuresis (at age 10).

3 had thyroid conditions brought under treatment.

2 had lower gastrointestinal problems, such as rectal abscess, brought under care.

2 children with extreme loss of hearing received hearing aids.

1 (a 5 year old) child was diagnosed early as having hemophilia. The preventive efforts at avoiding injuries could save hundreds of treatment dollars.

2 cases of child abuse (beating, burns) were discovered early and the children were removed from the home.

1 child was found to have Legg-Perthes Disease (osteochondrosis). Early intervention meant the braces given to the child prevented problems with bone growth and avoided special education for the child.

1 baby had bronchial pneumonia at age one month and had recently been in the hospital for URI. Tuberculosis was diagnosed and treated, and the repeated respiratory admissions avoided.

1 child had history of recurring URI. Cystic fibrosis was diagnosed early and controlled.

1 teen had a history of falling. Osgood-Schlatter's disease (insufficient knee cap support) was diagnosed. The person now walks well after surgery.

Some persons have stated that EPSDT only documents already known conditions. However, the number of problems diagnosed as severe (as rated by the physician to whom the child was referred on a scale of mild, moderate, or severe) cases of the diagnosed condition was similar regardless of the reported previous utilization of health care. The number of referrals per 100 screens was only slightly lower (33 versus 38) for children who had been to a private physician in the previous twelve months as compared to those who had not, as pointed out in the previous section of the report. Detection of the major types of problems found in screening--dental, vision, anemia, hearing--require testing that was apparently not usually done during a routine office visit.

From the blood samples, the laboratory performed a test for the absence of an enzyme called Glucose-6-Phosphate Dehydrogenase. Approximately 2% of the 2,448 black children tested had the deficiency. Children with such a deficiency become highly susceptible to infections if they are exposed to such drugs as sulfonamides, sulfones, antipyretics, analgesics and synthetic vitamin K. One of the children with G6PD deficiency which was newly discovered in screening was in the sample data for the Medicaid payment claims. In the year prior to screening, Medicaid paid a total of $1196 for repeated episodes of gastroenteritis. Once the enzyme deficiency was discovered the state paid only $142 during the twelve months after screening.

Another child was found to have lead poisoning. It was discovered that the apartment house where the family was living was built on top of a lead battery dump. The health department required the apartment owner to replace the top soil with fresh soil to avoid further lead contamination. The lead level was so high in the child that serious damage would have been incurred without the early intervention.

An analysis of the dental treatment cost (paid claim) profiles showed that severe dental caries required three times the expense to repair as mild cases. If the project could get children to dental treatment early and provide effective dental health education, the major treatment expense in Medicaid programs which include dental care for children could be reduced by at least half.

Immunization status was improved. Although Contra Costa County previously had a high rate of immunization, the EPSDT project gave an average of 1.076 immunizations per child screened. Approximately one-third of the

original screens showed a need for DPT or DT, one-third needed polio vaccination, and 20% needed measles, mumps, and rubella vaccine. The fact that one-third needed an immunization means that the screening is also serving as an immunization program. In this case, the other screening done at the clinic visit could be considered as a small variable cost added to an immunization program. Alternatively, program costs of other HEW programs are kept to a minimum due to the expenditure of funds by the EPSDT program.

2. Change in health status: A comparison of the findings of the original and periodic screens, for those children who had periodic screens, showed 15 fewer serious problems per 1,000 screens on the periodic screen than the original screen, although there was a very slight increase in total referrals for most age groups. This was encouraging because the general tendency is for the rate of findings to increase dramatically with age. An analysis of the referrals of children with multiple screens showed that the majority of children referred for a particular problem (caries, anemia, vision, dermatological) did not have the same problem at the time of the periodic screen.

Within the group of children with multiple screens, the healthiness rating (a subjective rating of the child's health by the screening examiner on a scale from one to nine where nine is perfect health) of children age one to eleven increased (more healthy) on the periodic screen. Whereas 67% were basically healthy* on the original screen, 80% were considered healthy on the periodic screen.

There are some qualifications to add to the aforementioned conclusion. First, the children who did not return for periodic screens had more problems at the time of the initial screen than those who did return. The improvement

*Rating of eight or nine on a subjective scale of healthiness from one (with threatening condition) to nine (picture of health) rated by the screening examiner.

in health status was likely to be much greater among those who did not return, assuming that they received treatment, than those who did return and were healthier in the first place. Therefore, the increased healthiness is probably understated.

The second qualification is that the children were not always rescreened by the same examiner who saw them at the initial screen. Different examiners tend to notice and refer different comditions. Therefore differences in findings between the original and the periodic screen may be partially due to a different examiner. To control for this possibility, the change in healthiness ratings were calculated by examiner for those children seen at each screen by the same examiner. The sample for each examiner was too small to make a good statistical statement, but the trend was toward better ratings on the second examination for 70% of the examiners.

A review of the types of conditions referred and treated due to the screening process indicates that EPSDT cannot be judged solely according to its ability to reduce Medicaid costs. The most frequent single diagnoses were dental, vision, anemia, and hearing. The treatment of these conditions allow children to live higher quality lives and allow them to have the physical potential for doing the best that they can in the educational system. Such a result does not lend itself to quantification and certainly will not show up in large short-term reductions in Medicaid costs.

It can be concluded that there was a definite increase in healthiness for the children in the project. As stated earlier, however, it is not known how many of these changes would have occurred in the absence of the screening

program. Controlled studies are needed.

The EPSDT program, as operated in Contra Costa County, helped to reduce significantly the number of undiagnosed or untreated medical and dental problems in a low income child population. Based on the data available in this report, several types of potential cost savings can be identified:

1. Reduced hospitalization costs due to early identification of conditions that generate admissions for respiratory conditions and infections such as cystic fibrosis, tuberculosis, Glucose-6-Phosphate Dehydrogenase deficiency, allergy, and through early identification of children suspect for child abuse, failure to thrive, and gastroenteritis, lead poisoning, and tonsillitis.

2. Avoidance of epidemics of communicable disease through increased immunization status.

3. Reduced costs of dental treatment through early detection and dental health education.

4. Reduced costs of visits to a varied number of professionals through one-stop well child care for vision, dental, and physical examinations.

5. Decreased costs of special education due to early detection of hearing loss, vision problems, emotional stress caused by a physical or personal problem.

The quantification of these savings would only be speculative at this time, but the list is suggestive that five year controlled studies may be worthwhile.

Recommendations concerning the Health Benefits of EPSDT:

1. Make reports to legislative appropriations committees that show case examples for each of the major type of conditions brought under care by EPSDT, and counts of the number of children brought to the increased health status created by correction or prevention of such conditions. The most frequent types of problems found and treated by EPSDT are

not amenable to short run cost benefit analysis. The determination of value depends upon societal valuation of improved child health in comparison to other social needs.

2. Fund longitudinal controlled studies of the impact on all costs to the family generated by an EPSDT type program over a 5 to 10 year time frame. The experimental group should be intensively offered the program and the comparison group not. The data of the Contra Costa EPSDT project suggest that effective EPSDT can generate dollar savings to cover at least part of the costs when all sources of medical and educational expenditures of the state, local and federal governmental levels are considered over a long enough time period.

ASPECTS OF THE DEMONSTRATION APPROACH

Social-medical demonstration projects which try new approaches are a time consuming and mentally fatiguing process on the part of established state and local agencies, because old ways of doing business are questioned and new ways are sought to eliminate barriers to care. Since there is always a new activity, many different political and legal bases must be informed and involved. In addition, researchers and evaluators are asking for service delivery to be made somewhat more complex in order to ensure appropriate study groups. The building of confidence among those involved in service delivery agencies, and between researchers and the health department, requires time and care due to the potentially threatening nature of new endeavors. For this reason, the three year timeframe for demonstrations which is typical of past demonstrations should be reconsidered. A one year planning and implementation period would be helpful due to the need to thoroughly plan and test out potential methods for organizing delivery of the service. Then, it takes another year to fully implement the program in the community. Another two years are needed to establish a sufficient data base to make statistically reliable conclusions. A phasedown period is required so that services (if they are not to be continued because of inadequate

funding) can be transferred to other agencies slowly. Then, a period of one year is needed for complete analysis of the available data and another year for editing and reporting. Some basic data analysis can be done during the project, but the perspective provided by the total period gives a broader base of analysis.

Contra Costa County EPSDT project was fortunate to get an extra year extension to conduct the dual screen and clinic staffing studies and to expand services into Central County, giving the project an additional year to collect data and phase down operations. Also due to additional funding, HSRI was able to continue data analysis and writing beyond the end of the grant. The extreme effort involved in project start-up and shut-down, and the difficulties in finding service delivery environments willing to innovate, mitigate toward the concept of an EPSDT test site which would have stable funding for at least a 10 year time period. The time consumed in preparing annual continuation requests should be spent, instead, in discussion with HEW personnel about project findings and potential new directions. New ideas about EPSDT could be investigated very quickly (in time for policy making) if the demonstration structure were already present.

Contra Costa County learned so much from this demonstration that they have launched into another demonstration--The Adolescent Health Project--which promises to drastically improve the methods of health department services to teenagers through combined one-stop clinics designed for promoting teen physical and mental health, and through an active school outreach program. Outcome measures have been included along with control groups to measure dollar impact of the teen health program.

CONCLUDING REMARKS

The purpose of this summary has been to convey the essence of a very large and complex report in a shorter document. The effort in the larger report was to include as much material as possible that would give detailed answers about project methodology and background available in one document.

The findings of the demonstration were related to appropriate decision makers for fashioning of EPSDT policies as soon as they became available and the results were used in obtaining a special emphasis on outreach. The cost figures were used in federal program budgeting. We hope that persons new to the EPSDT program at various levels will be stimulated by the report into thinking of new approaches and designing cost-effective programs for improvement of child health, and conducting detailed local evaluation of the program's processes and impact.

CMS LIBRARY
3 8095 00014776 5